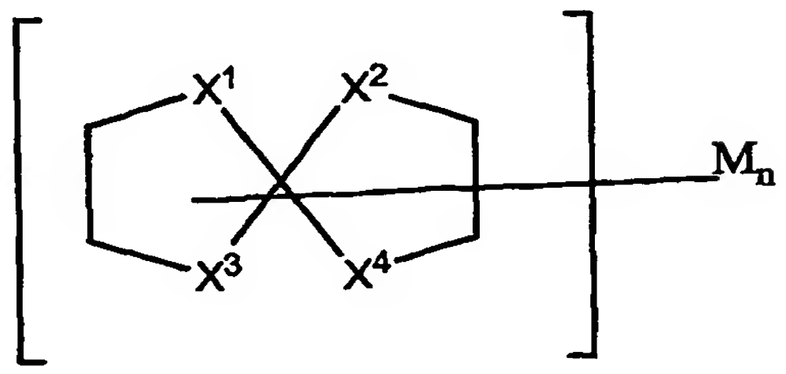
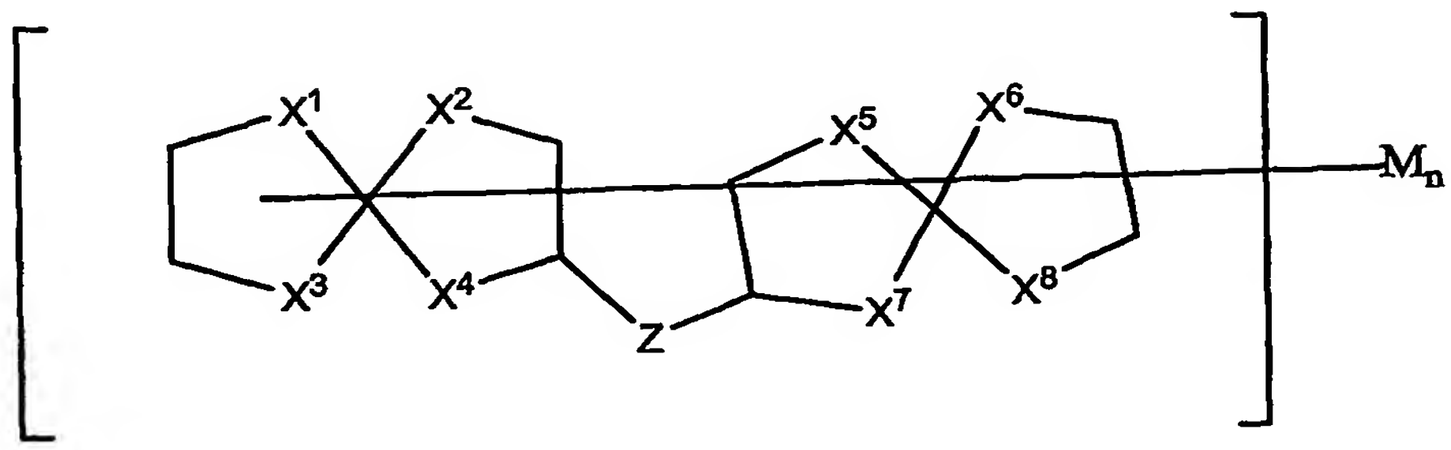
WHAT IS CLAIMED IS:

1. A compound of Formula I:



Formula I

or Formula II:



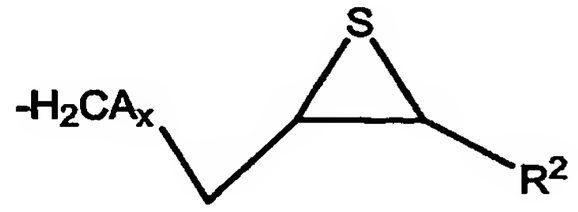
Formula II

wherein X^1, X^2, X^3, X^4, X^5, X^6, X^7, and X^8, are independently O or S; and preferably at least two and up to all four of X^1, X^2, X^3 and X^4, and at least two and up to all four of X^5, X^6, X^7, and X^8 are sulfur;

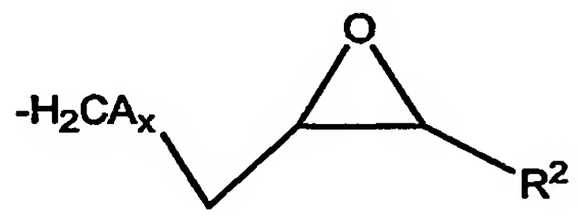
Z is $-C_mR^2{}_{2m}-$ wherein m = 1 to 4; $-C(R^2)_2SC(R^2)_2-$, $-C(R^2)_2SSC(R^2)_2-$, or $-C(R^2)2OC(R^2)_2$;

n is from 0 to 4;

M is selected from CH_2Cl, $CH_2SC(O)R^1$, $CH_2SC(S)R^1$, $CH_2S(CH_2CH_2S)qH$ wherein q is 0, 1 or 2; $-CR^2=CH_2$, $-CH_2OC(O)CR^2=CH_2$, $CH_2N=C=S$, $CH_2N=C=O$, CH_2NR^2H, CH_2OH, $CH_2SCH_2CH_2CR^2=CH_2$, phenyl, $C(R^2)_2$ phenyl, furan, thiophene, halogen, C_3-C_6 cycloalkyl, C_3-C_6 heretocyclics, thiol, H,



or



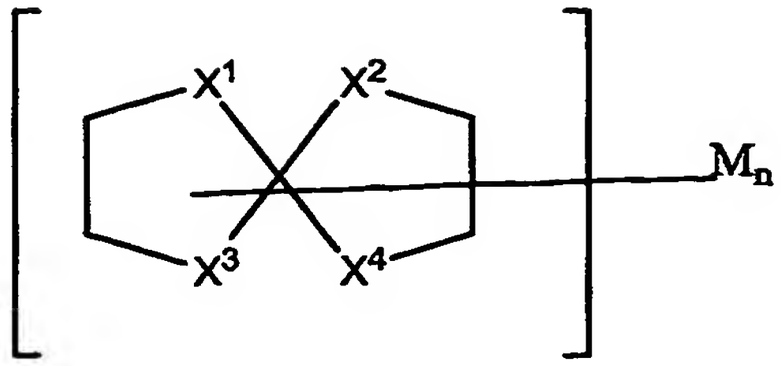
A is O, S or phenyl and x is 0 or 1;

wherein R^1 is C_1-C_{22} alkyl; and

R^2 is H or C_1-C_{22} alkyl,

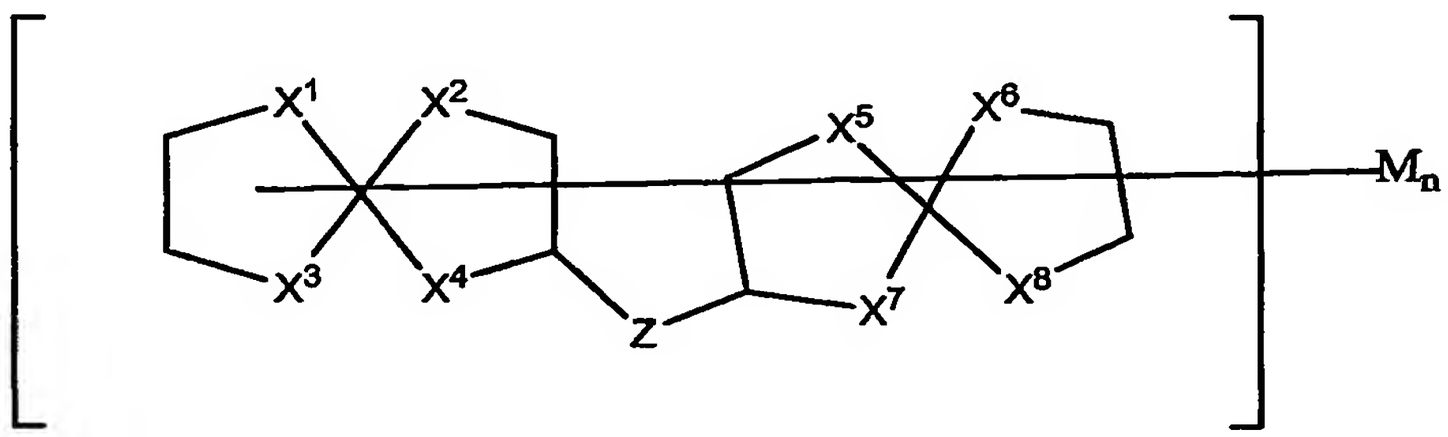
except that if the compound is a STOC or SOTOC, at least one M substituent cannot be H and n must be 1, 2, 3 or 4.

2. The compound of claim 1, further defined as having Formula I:



wherein X^1, X^2, X^3 and X^4 are O or S, wherein at least two and up to all four of X^1, X^2, X^3 and X^4 are S.

3. The compound of claim 1, further defined as having Formula II:



wherein n is 1, 2, 3 or 4.

4. The compound of claim 1, further defined as:

2-(Mercaptomethyl)-1,4,6,9-tetrathiaspiro[4.4]nonane;

2,7-Bis(mercaptomethyl)-1,4,6,9-tetrathiaspiro[4.4]nonane;

2-(S-methyl)-7-vinyl-1,4,6,9-tetrathiaspiro[4.4]nonane thiolacetate;

2-(Mercaptomethyl)-7-vinyl-1,4,6,9-tetrathiaspiro[4.4]nonane;

7-(Mercaptomethyl)-2-(S-methyl)-1,4,6,9-tetrathiaspiro[4.4]nonane thiolacetate;

2-Mercaptomethyl-1-oxa-4,6,9-trithiaspiro[4.4]nonane; or

2,7-Bis(mercaptomethyl)-1-oxa-4,6,9-trithiaspiro[4.4]nonane.

5. The compound of claim 1, further defined as:

2-(Chloromethyl)-1,4,6,9-tetrathiaspiro[4.4]nonane;

2-(S-Methyl)-1,4,6,9-tetrathiaspiro[4.4]nonane thiolacetate;

4-(S-Methyl)-1,3-dithiolane-2-thione thiolacetate;

2-(Chloromethyl)-7-(S-methyl)-1,4,6,9-tetrathiaspiro[4.4]nonane thiolacetate;

2,7-Bis(S-methyl)-1,4,6,9-tetrathiaspiro[4.4]nonane thiolacetate;

2-(S-methyl)-1-oxa-4,6,9-trithiaspiro[4.4]nonane thiolacetate;

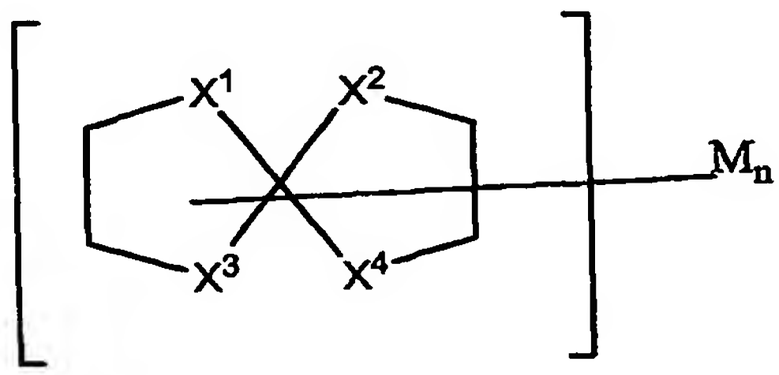
2-(Mercaptomethyl)-1-oxa-4,6,9-trithiaspiro[4.4]nonane;

2-(Chloromethyl)-7-(S-methyl)-1-oxa-4,6,9-trithiaspiro[4.4]nonane thiolacetate; or

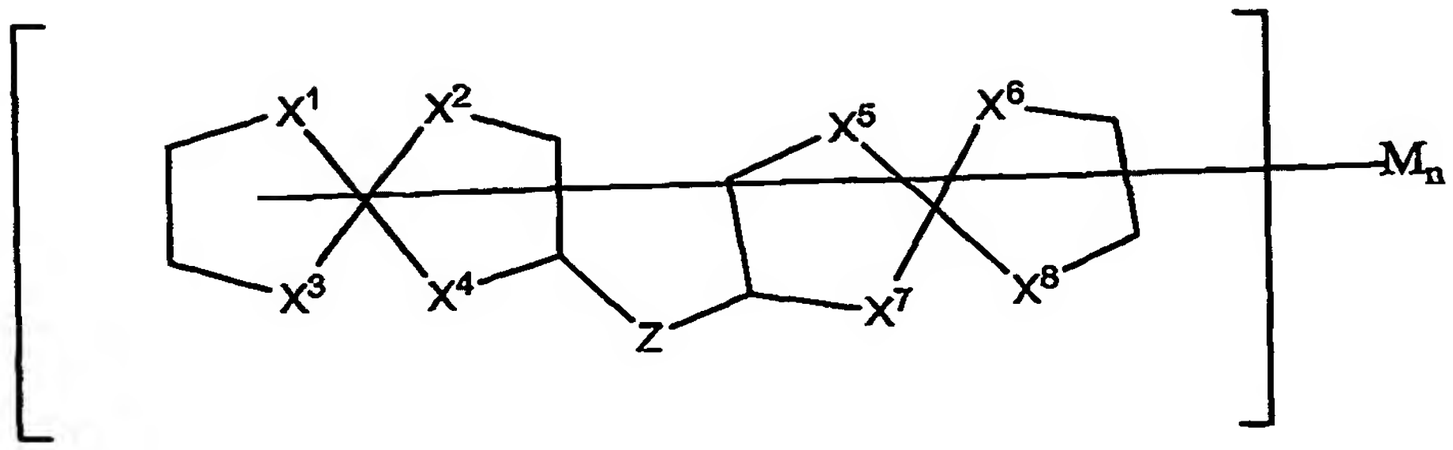
2,7-Bis(S-methyl)-1-oxa-4,6,9-trithiaspiro[4.4]nonane thiolacetate.

6. A method for manufacturing optical lenses comprising:

Polymerizing STOC or SOTOC compound of Formula I :



or a bisSTOC or bisSOTOC compound of Formula II :

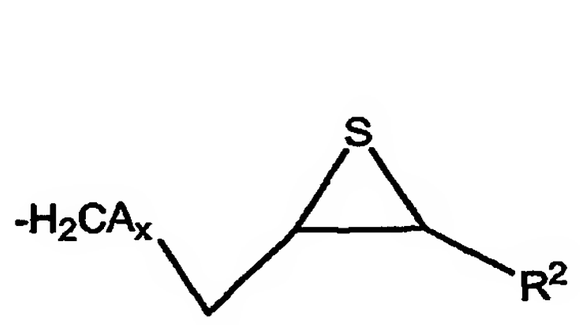


wherein X^1, X^2, X^3, X^4, X^5, X^6, X^7, and X^8, are independently O or S; and preferably at least two and up to all four of X^1, X^2, X^3 and X^4, and at least two and up to all four of X^5, X^6, X^7, and X^8 are sulfur;

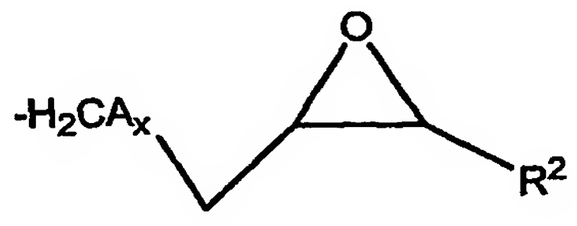
Z is $-C_mR^2_{2m}-$ wherein m = 1-4; $-C(R^2)_2SC(R^2)_2-$, $-C(R^2)_2SSC(R^2)_2-$, or $-C(R^2)_2OC(R^2)_2$;

n is from 0 to 4, except that if the compound is a STOC or SOTOC, n must be 1, 2, 3 or 4; and

M is selected from CH_2Cl, $CH_2SC(O)R^1$, $CH_2SC(S)R^1$, $CH_2S(CH_2CH_2S)qH$ wherein q is 0, 1 or 2; $-CR^2=CH_2$, $-CH_2OC(O)CR^2=CH_2$, $CH_2N=C=S$, $CH_2N=C=O$, CH_2NR^2H, CH_2OH, $CH_2SCH_2CH_2CR^2=CH_2$, phenyl, $C(R^2)_2$ phenyl, furan, thiophene, halogen, C_3-C_6 cycloalkyl, C_3-C_6 heretocyclics, thiol, H,, except that if the compound is a STOC or SOTOC, at least one M moiety cannot be H;



or



wherein A is S, O or phenyl and x is 0 or 1;

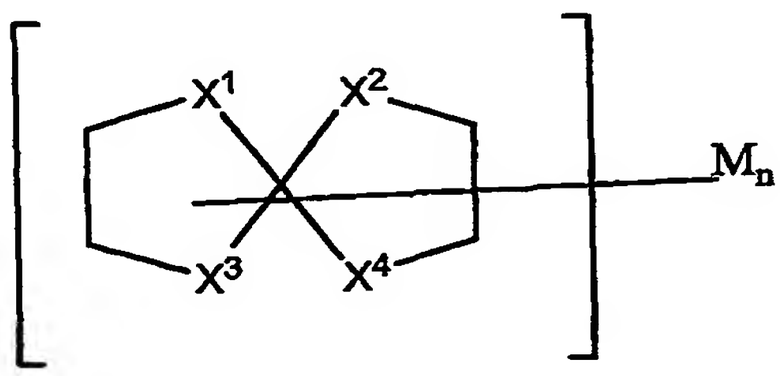
R^1 is C_1-C_{22} alkyl; and

R^2 is H or C_1-C_{22} alkyl to form a polymer, and

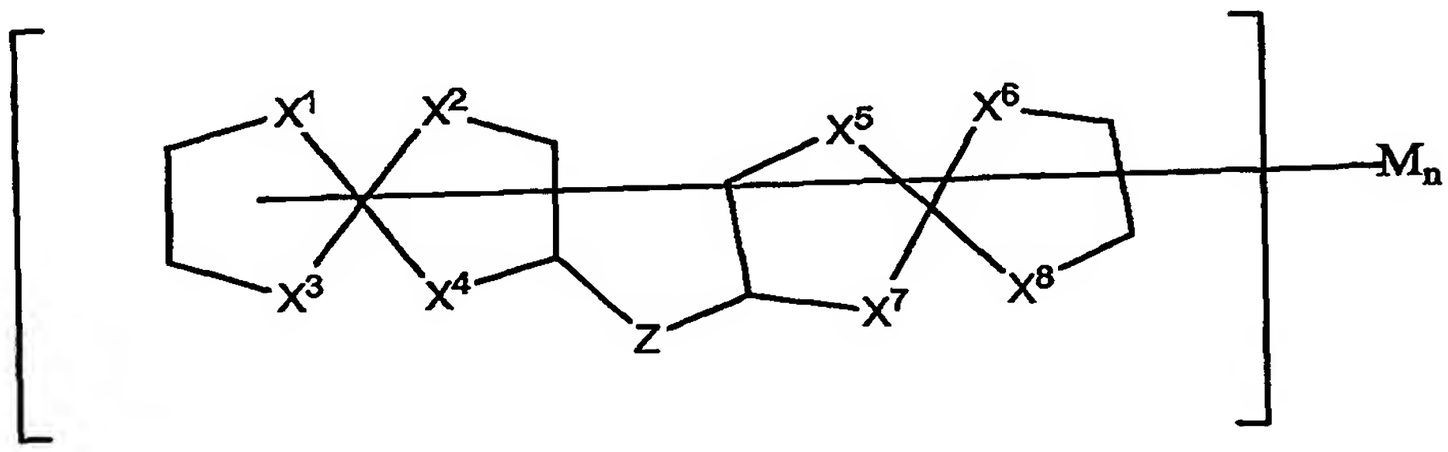
forming an optical lens with said polymer.

7. A method for manufacturing an optical lens comprising:

polymerizing a STOC or SOTOC compound of Formula I:



or a bisSTOC or bisSOTOC compound of Formula II



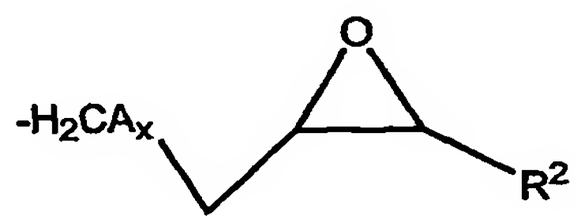
wherein X^1, X^2, X^3, X^4, X^5, X^6, X^7, and X^8, are independently O or S; and preferably at least two and up to all four of X^1, X^2, X^3 and X^4, and at least two and up to all four of X^5, X^6, X^7, and X^8 are sulfur;

Z is $-C_mR^2{}_{2m}-$ wherein m = 1-4; $-C(R^2)_2SC(R^2)_2-$, $-C(R^2)_2SSC(R^2)_2-$, or $-C(R^2)2OC(R^2)_2$;

n is from 0 to 4, except that if the compound is a STOC or SOTOC, n must be 1, 2, 3 or 4; and

M is selected from CH_2Cl, $CH_2SC(O)R^1$, $CH_2SC(S)R^1$, $CH_2S(CH_2CH_2S)qH$ wherein q is 0, 1 or 2; $-CR^2=CH_2$, $-CH_2OC(O)CR^2=CH_2$, $CH_2N=C=S$, $CH_2N=C=O$, CH_2NR^2H, CH_2OH, $CH_2SCH_2CH_2CR^2=CH_2$, phenyl, $C(R^2)_2$ phenyl, furan, thiophene, halogen, C_3-C_6 cycloalkyl, C_3-C_6 heretocyclics, thiol, H,, except that if the compound is a STOC or SOTOC, at least one M moiety cannot be H;

or



wherein A is S, O or phenyl and x is 0 or 1;

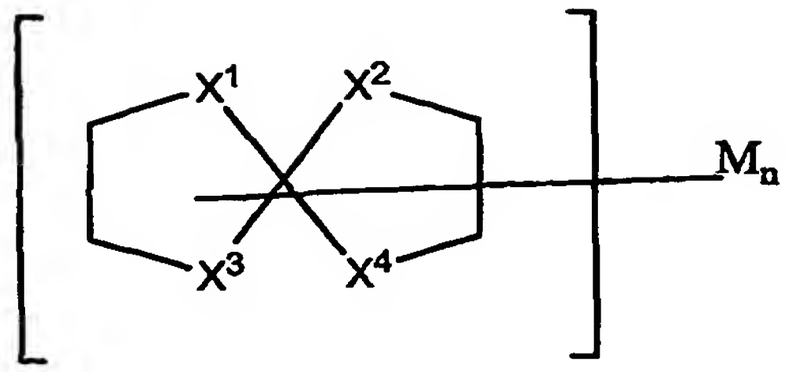
R^1 is C_1-C_{22} alkyl; and

R^2 is H or C_1-C_{22} alkyl to form a polymer forming all or part of the optical lens.

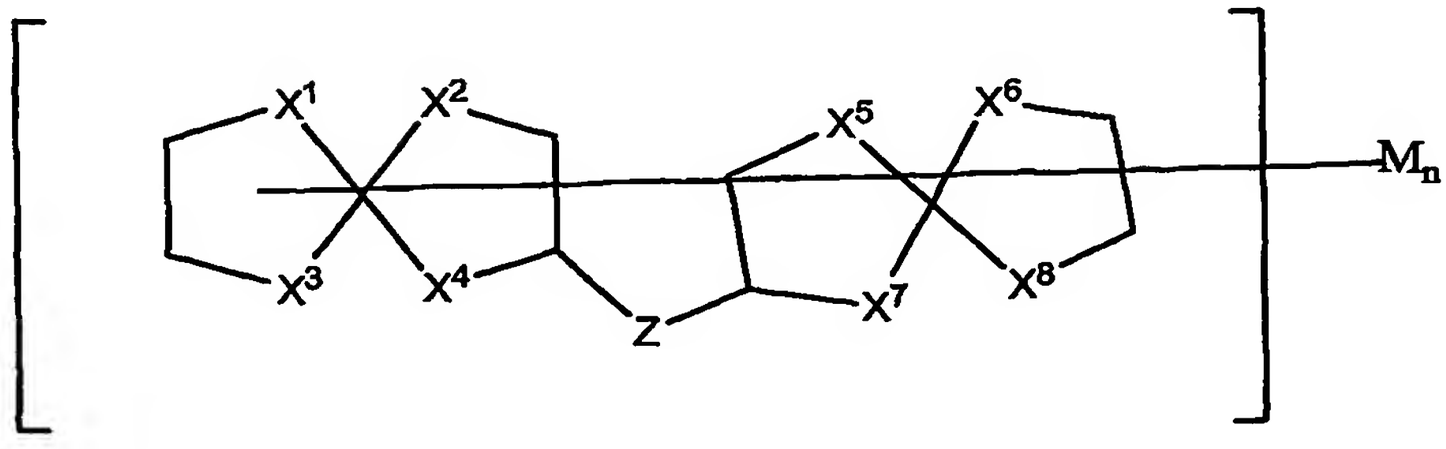
8. The method of claim 7, wherein the polymer forms the body of the lens.

9. The method of claim 7, wherein the polymer forms a coating of the lens.

10. A (co)polymer comprising (co)polymerized monomers of Formula I:



or Formula II:

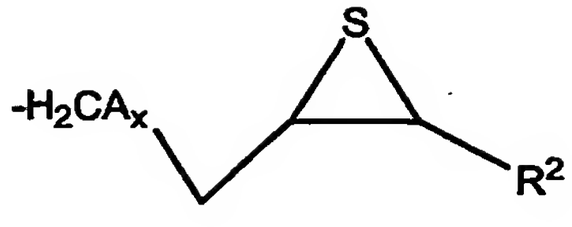


wherein X^1, X^2, X^3, X^4, X^5, X^6, X^7, and X^8, are independently O or S; and preferably at least two and up to all four of X^1, X^2, X^3 and X^4, and at least two and up to all four of X^5, X^6, X^7, and X^8 are sulfur;

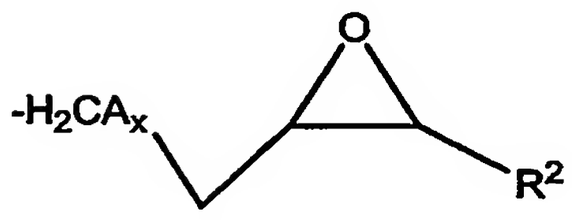
Z is $-C_mR^2_{2m}-$ wherein m = 1-4; $-C(R^2)_2SC(R^2)_2-$, $-C(R^2)_2SSC(R^2)_2-$, or $-C(R^2)2OC(R^2)_2$;

n is from 0 to 4, except that if the compound is a STOC or SOTOC, n must be 1, 2, 3 or 4; and

M is selected from CH_2Cl, $CH_2SC(O)R^1$, $CH_2SC(S)R^1$, $CH_2S(CH_2CH_2S)qH$ wherein q is 0, 1 or 2; $-CR^2=CH_2$, $-CH_2OC(O)CR^2=CH_2$, $CH_2N=C=S$, $CH_2N=C=O$, CH_2NR^2H, CH_2OH, $CH_2SCH_2CH_2CR^2=CH_2$, phenyl, $C(R^2)_2$ phenyl, furan, thiophene, halogen, C_3-C_6 cycloalkyl, C_3-C_6 heretocyclics, thiol, $H_,$, except that if the compound is a STOC or SOTOC, at least one M moiety cannot be H;



or



wherein A is S, O or phenyl and x is 0 or 1;

R^1 is C_1-C_{22} alkyl; and

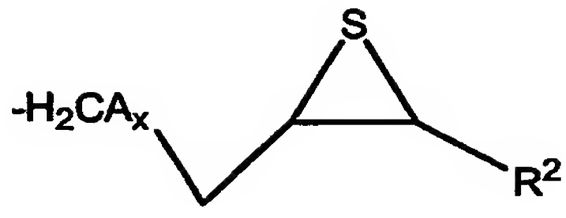
R^2 is H or C_1-C_{22} alkyl

wherein X^1, X^2, X^3, X^4, X^5, X^6, X^7, and X^8 are independently O or S;

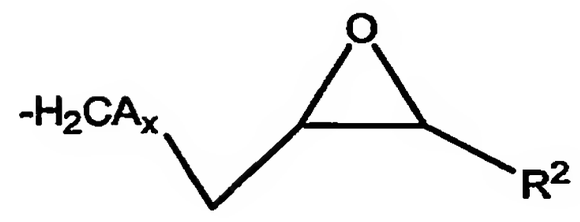
n is 0 to 4

Z is $-C_mR^2_{2m}-$ wherein m = 1-4; $-C(R^2)_2SC(R^2)_2-$, $-C(R^2)_2SSC(R^2)_2-$, or $-C(R^2)2OC(R^2)_2-$;

M is CH_2Cl, $CH_2SC(O)R^1$, $CH_2SC(S)R^1$, $CH_2S(CH_2CH_2S)qH$ wherein q is 0, 1 or 2; $-CR^2=CH_2$, $-CH_2OC(O)CR^2=CH_2$, $CH_2N=C=S$, $CH_2N=C=O$, CH_2NR^2H, CH_2OH, $CH_2SCH_2CH_2CR^2=CH_2$, phenyl, $C(R^2)$ phenyl, furan, thiophene, halogen, C_3-C_6 cycloalkyl, C_3-C_6 heretocyclics, thiol,



or

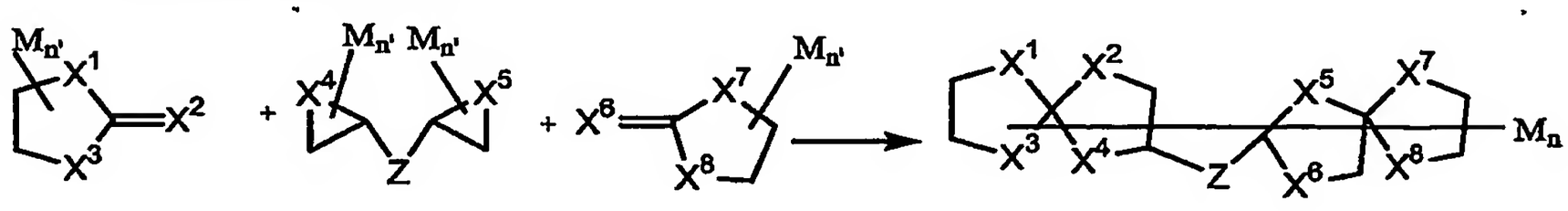


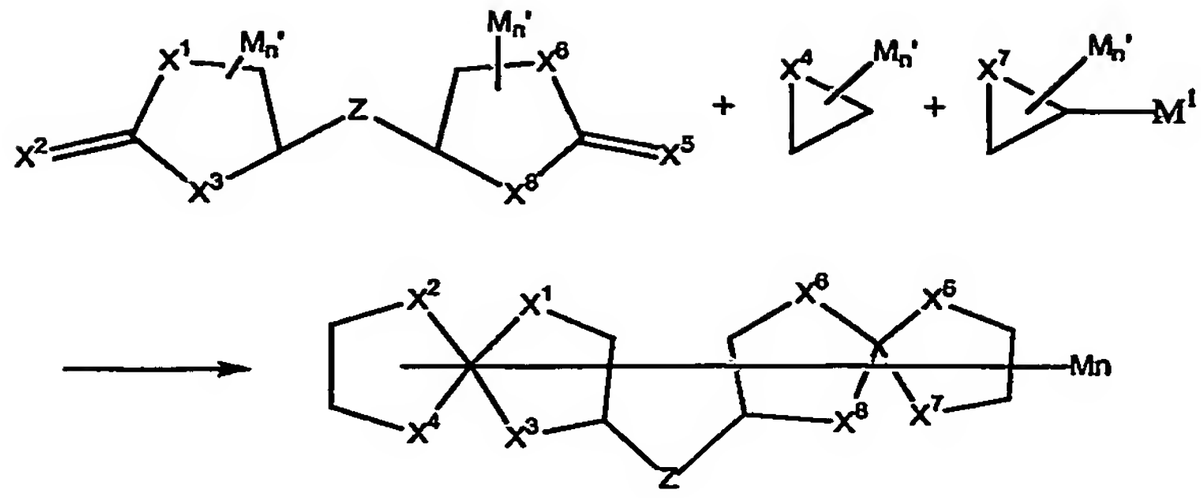
wherein A is S, O or phenyl and x is 0 or 1;
wherein R^1 is C_1-C_{22} alkyl; and
R^2 is H or C_1-C_{22} alkyl to form the polymer.

11. The (co)polymer of claim 10, further defined as comprised in an optical lens.

12. A method of preparing a bisSTOC or bisSOTOC compound, comprising using either one of the following reactions schemes :

Reaction scheme 2



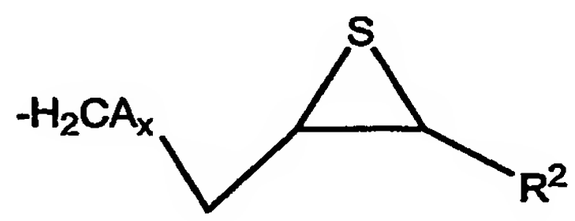


wherein X^1, X^2, X^3, X^4, X^5, X^6, X^7, and X^8 are independently O or S ; n' is independently 0, 1 or 2 ;

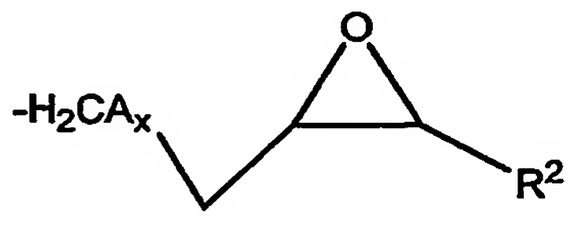
n is 0 to 4,

Z is $-C_mR^2_{2m}-$ wherein m = 1-4; $-C(R^2)_2SC(R^2)_2-$, $-C(R^2)_2SSC(R^2)_2-$, $-C(R^2)_2OC(R^2)_2-$;

M is independently selected from CH_2Cl, CH_2SH, $CH_2SC(O)R^1$, $CH_2SC(S)R^1$, $CH_2S(CH_2CH_2S)qH$ wherein q is 0, 1 or 2, $-CR^2=CH_2$, $-CH_2OC(O)CR^2=CH_2$, $CH_2N=C=S$, $CH_2N=C=O$, CH_2NR^2H, CH_2OH, $CH_2SCH_2CH_2CR^2=CH_2$, phenyl, $C(R^2)_2$ phenyl, furan, thiophene, halogen, C_3-C_6 cycloalkyl, C_3-C_6 heretocyclics, thiol, H,



or

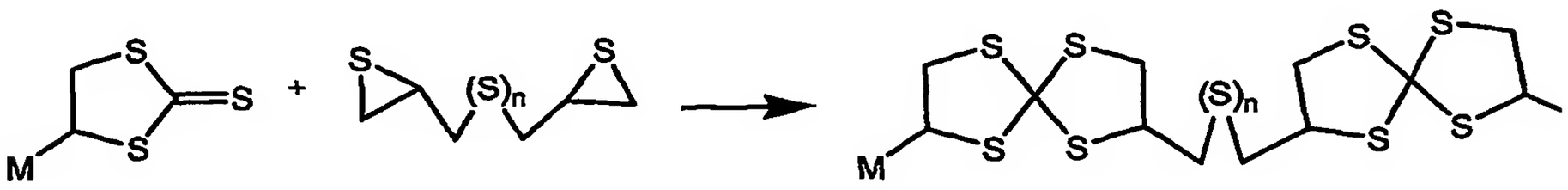


wherein A is S, O or phenyl and x is 0 or 1;

R^1 is C_1-C_{22} alkyl; and

R^2 is H or C_1-C_{22} alkyl.

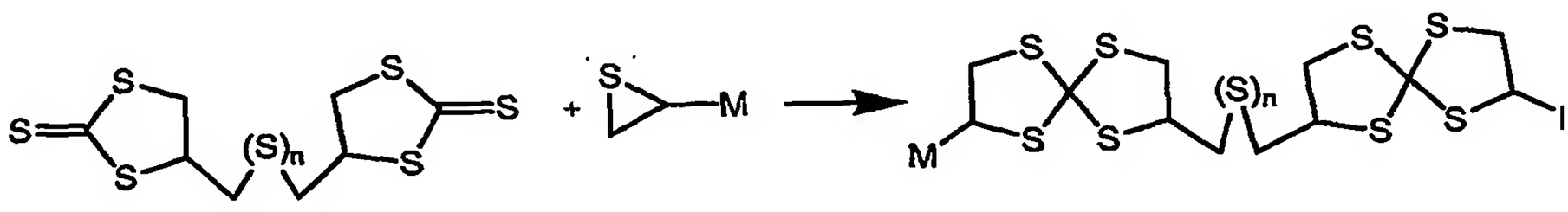
13. The method of claim 12, comprising reacting a substituted ethylenetrithiocarbonate with a bis-methylthiirane sulphide or a bis-methylthiirane disulphide, in the presence of a catalytic amount of tetrafluoroboric acid to produce the bisSTOC as shown in the reaction below:



wherein

M is selected from CR_2SR', $CR_2{=}CH_2$, R = H, or C_1-C_4 alkyl; and R' = H, acetyl, allyl, acrylate, or methacrylate and n = 1 or 2.

14. The method of claim 12, comprising reacting a bis-ethylenetrithiocarbonate sulfide or a bis-ethylenetrithiocarbonate, with substituted thiirane in the presence of a catalytic amount of tetrafluoroboric acid to produce the bisSTOC according to the following reaction:



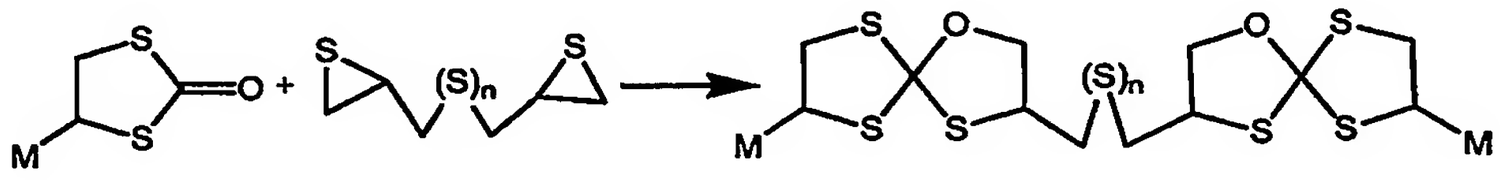
wherein M is CR_2Cl, CR_2SR', or $CR_2{=}CH_2$;

R is H, alkyl C_1-C_4,

R' is H, allyl, acrylate, or methacrylate and

n = 1 or 2.

15. The method of claim 12, comprising reacting a substituted ethylenedithiocarbonate with bis-methylthiirane sulphide or bis-methylthiirane disulphide in the presence of a catalytic amount of tetrafluoroboric acid to produce the bisSOTOC according to the reaction



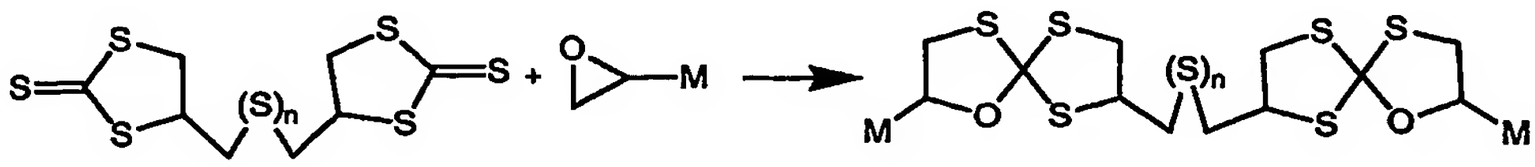
wherein M = CR_2SR', $CR_2{=}CH_2$;

R = H, C_1-C_4 alkyl,

R' = H, acetyl, allyl, acrylate, or methacrylate, and

n = 1 or 2.

16. The method of claim 12, further defined as a method wherein at least one of bis-ethylenetrithiocarbonate sulfide or bis-ethylenetrithiocarbonate is reacted with a substituted oxirane, in the presence of a catalytic amount of tetrafluoroboric acid to produce the bisSOTOC according to the reaction



wherein M = CR_2Cl, CR_2OR' or $CR_2{=}CH_2$;

R = H, C_1-C_4 alkyl;

R' = H, allyl, acrylate or methacrylate); and

n = 1 or 2.

17. The method of preparing a polythiourethane polymer having a high refractive index which comprises reacting at least one polyisocyanate or prepolymer thereof, preferably a diisocyanate, with a STOC, SOTOC, bisSTOC or bisSOTOC compound having at least one, preferably two, SH bearing substituent(s) as set forth in anyone of claims 1 to 5 or a mixture thereof.

18. The method of preparing a polymer having a high refractive index which comprises reacting a monomer having at least one unsaturated reactive group or a mixture thereof and/or one or more polyepisulfides with a STOC, SOTOC, bisSTOC or bisSOTOC compound having at least one, preferably two, SH bearing substituent(s) as set forth in anyone of claims 1 to 5 or a mixture thereof.

19. The method of preparing a polymer having a high refractive index which comprises reacting a monomer having at least one and preferably 2 SH groups or a mixture thereof and/or one or more polyepisulfides with a STOC, SOTOC, bisSTOC or bisSOTOC compound having at least one, preferably two episulfide bearing substituent(s) as set forth in claims 1 to 5, or a mixture thereof.

20. The method of preparing a polymer having a high refractive index which comprises reacting one or more of copolymerizable monomers as in claim 18 or 19 and/or one or more polythiol monomer(s) and/or polyepisulfide monomer(s) or prepolymer(s) thereof with a STOC, SOTOC, bisSTOC or bisSOTOC compound having at least one unsaturated group or mixtures thereof.

21. The method of claim 17, further defined as comprising:

preparing a mixture of m-xylylene diisocyanate (m-XDI) and 2,7 bis(mercaptomethyl)-1,4,6,9-tetrathiaspiro[4.4]nonane;

adding a catalyst solution comprising KSCN and a crown-ether; and

curing the mixture at a temperature above 20°C.

22. The method of claim 17, further defined as comprising:

dissolving $SnBu_2Cl_2$ in m-xylylene diisocyanate (m-XDI);

adding 2,7-Bis(mercaptomethyl)-1,4,6,9-tetrathiaspiro[4.4]nonane;

stirring; and

curing at a temperature above 30°C.